

REMARKS

Reconsideration and allowance of the subject application are respectfully requested. By this Amendment, Applicant has amended claims 14 and 17. Upon entry of this Amendment, claims 1-27 are all the claims pending in the application. In response to the Office Action, Applicant respectfully submits that the pending claims define patentable subject matter.

I. Overview of the Office Action

Claims 1-6, 8, 14-18, 20, 26, and 27 are rejected under 35 U.S.C. § 102(b) as being anticipated by Rafii et al. (U.S. Patent No. 6,512,838, hereafter “Rafii”). Claims 7, 9-11, 19, and 21-23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Rafii in view of Chung (U.S. Patent Application Publication No. 2005/0104869). Claims 12, 13, 24, and 25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Rafii in view of Ng et al. (U.S. Patent Application Publication No. 2003/0193478, hereafter “Ng”).

II. Preliminary Matters

A. Foreign Priority

Applicant thanks the Examiner for acknowledging the claim for Foreign Priority, and confirming receipt of a certified copy of the priority document in the United States Patent and Trademark Office.

B. Objection to the Abstract

The Examiner has objected to the Abstract because it allegedly “does not have the proper content of the disclosure.” After carefully reviewing the Abstract, Applicant respectfully disagrees with the Examiner and finds the Examiner’s position unclear. The Abstract clearly gives a concise description of the technical features of the application as described in the specification and the claims, and includes what is considered by Applicant to be new in the art.

Accordingly, Applicant respectfully submits that the objection to the Abstract is improper, and requests the Examiner to remove the objection to the Abstract.

III. Rejection under 35 U.S.C. § 112,

The Examiner has rejected claims 14 and 17 under 35 U.S.C. § 112, second paragraph as allegedly being indefinite. By this Amendment, Applicant has amended claims 14 and 17 in order to improve clarity. Accordingly, the Examiner is respectfully requested to remove the 35 U.S.C. § 112 second paragraph, rejection.

IV. Prior Art Rejections

Disclosure of Rafii

Rafii generally discloses a system for enabling a user to input commands and data from a passive virtual emulation of a manual input device to a companion computer system (column 8, lines 1-13). The system includes a three-dimensional sensor imaging system that captures real-time three-dimensional data as to the placement of a user's fingers on a substrate bearing or displaying a template that is used to emulate an input device such as a keyboard, keypad or digitized surface (column 4, lines 54-67).

Analysis

With respect to independent claim 1, Applicant respectfully submits that there is no teaching or suggestion in Rafii of "a key information storage unit that stores key values respectively mapped to both a predefined button of the plurality of buttons of the virtual keyboard and a predefined order of the user's fingers used to select the predefined button" as claimed. The Examiner cites FIG. 3 and column 21, lines 35-41 of Rafii as allegedly disclosing

this feature of claim 1. However, this cited portion of claim 1 merely discloses mapping the sensed image of fingers obtained from a sensor to the fingers of a template; mapping a user's fingers at a rest position to specific keys on the keyboard (for example, the user's left hand fingers may touch the "A", "S", "D", and "F" keys and the right hand fingers may touch the "J", "K", "L", and "." keys (column 20, lines 6-13)), and sensing a user's fingers and mapping finger movements to correct keys on a virtual keyboard.

Nowhere does this cited portion (or any other portion) of Rafii teach or suggest storing key values mapped to both a predefined button of the virtual keyboard and a predefined order of the user's fingers used to select the predetermined button as required by independent claim 1.

Further, Applicant respectfully submits that there is no teaching or suggestion in Rafii of "a key determination unit that finds a selected key value by matching the selected button and order of the user's fingers with the predefined button and predefined order of the user's fingers mapped in the key information storage unit" as recited in independent claim 1. The Examiner cites FIG. 3, and specifically routine 285 as allegedly disclosing this feature of the claim, and broadly asserts that:

[R]outine 285 in essence moves or relocates the virtual keyboard to under the user's fingers. Such procedure may be carried out by mapping the image obtained from sensor 20 to the fingers of the template, and then mapping the touched keys to the natural position for the user, which natural position was determined during the template construction phase.¹

Applicant finds the Examiner's position unclear, and fails to see how this equates to finding a selected key value by matching a selected button and order of a user's fingers with a

¹ Page 4 of the Office Action dated March 7, 2007.

predefined button and predefined order of the user's fingers that are mapped in the key information storage unit. This feature of the claim is simply not taught or suggested by Rafii.

With respect to independent claim 14, Applicant respectfully submits that there is no teaching or suggestion in Rafii of "identifying a selected key value corresponding to the sensed positions of the fingers and the order of the user's fingers that are used to select the virtual button, amongst a plurality of stored key values" as claimed. The Examiner cites column 21, lines 15-22 of Rafii as allegedly disclosing this feature of claim 14.

However, this cited portion of Rafii merely discloses that templates can be used to identify the finger positions of a user based on data obtained from a sensor. There is simply no disclosure in this cited portion (or any other portion) of Rafii of identifying a key value which corresponds to the sensed positions of the fingers and the order of the user's fingers from a plurality of stored key values as required by claim 1.

With respect to independent claims 26 and 27, Applicant respectfully submits that there is no teaching or suggestion in Rafii of "mapping keys onto virtual buttons of a virtual keyboard that are selected by a user's fingers upon which are individually mounted a plurality of sensors" as recited in claim 26 and analogously recited in independent claim 27. The Examiner asserts that:

[T]he sensor (20) comprises a plurality of rays (150)² projected on each finger represent a plurality of sensors.³

² Applicant assumes that the Examiner meant "rays (140)".

³ Page 10 of the Office Action dated March 7, 2007.

Applicant finds the Examiner's position baffling. It is quite clear that Rafii only discloses a single sensor 20 which focuses on the fingers of a user's hands. There is simply no teaching or suggestion in Rafii of sensors individually mounted on a user's fingers. Further, contrary to the Examiner's assertions, "rays" are not sensors, but radiation emitted by the sensor.

Further with respect to claim 26, there is no teaching or suggestion in Rafii of "determining the number of sensors; allocating key values according to the number of sensors; and mapping the allocated key values onto a first virtual button" as recited in claim 26 and analogously recited in claim 27. The Examiner again apparently reads the claimed plurality of sensors on the rays 140 of Rafii. As discussed above, rays are not sensors, accordingly, there is no disclosure in Rafii of determining the number of sensors and allocating key values according to the number of sensors as required by independent claim 26 and analogous independent claim 27.

Lastly, Chung and Ng do not teach or suggest the above noted features of claims 1, 14, 26, and 27 which are missing from Rafii.

Accordingly, Applicant respectfully submits that independent claims 1, 14, 26, and 27 should be allowable because the cited references, alone or in combination, do not teach or suggest all of the features of the claims. Claims 2-13 and 15-25 should also be allowable at least by virtue of their dependency on independent claims 1 and 14.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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